# INDOOR AIR '87.

17.–21. August 1987, Berlin (West)

## Final Programme

**Conference Secretariat**
CPO Hanser Service GmbH
Schaumburgallee 12
D-1000 Berlin 19
Telephone (0)30/305 31 31
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Telex 186 111 cpo d



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# The 4th International Conference on Indoor Air Quality and Climate INDOOR AIR '87

17–21 August 1987, Berlin (West)

**Under the Auspices of:**
World Health Organization
Commission of the European Communities

**Organized by:**
Institute for Water, Soil and Air Hygiene

**Sponsored by:**
Federal Minister for the Environment, Nature Conservation and Reactor Safety (D)
Senate of Berlin (D)
Air Pollution Control Association (USA)
American Society of Heating, Refrigerating and Air Conditioning Engineers (USA)
Department of Energy (USA)
Environmental Protection Agency (USA)
Representatives of European Heating and Ventilation Associations
Association of German Engineers (VDI-D)
Commission on Occupational Prevention
Swiss Federal Office of Public Health
Cooperative Foundation against Environmental Pollution (Japan)
Fraunhofer Research Institute (USA)
Gas Research Institute (USA)
Deutsche Bank AG (D)

## Exhibitors

**Analytische Messtechnik GmbH**
Nobelstr. 51, D-7500 Karlsruhe

**Bioclimatic GmbH**
Rodenbergstr. Allee 30, D-3052 Bad Nenndorf

**Biocontrol**
Postfach 4130, D-6500 Mainz

**Brüel & Kjær GmbH**
Hirschgraben 2–4, D-2085 Quickborn

**Bürgert Product**
Obere Mangfallstr. 13, D-8206 Kolbermoor

**Dehn + Hahn & Wittmer GmbH**
Burgstr. 47, D-8729 Eberheim

**Dragerwerk Aktiengesellschaft**
Moislinger Allee 53/55, D-2400 Lübeck 1

**Flakt AB**
Box 8901, S-104 82 Stockholm

**Günter Karl OHG**
Schützenstraße 92, D-6222 Geisenheim-Johannisberg

**Aunt GmbH & Co.**
Im Buttfeld 31, D-4152 Grefrath

**Rotronic Messgeräte GmbH**
Otto-Str. 4, D-6000 Frankfurt 61

**Eckhard Steinicke**
Georg-Wilhelm-Str. 3, D-1000 Berlin 31

**Tekmar Company**
P.O. Box 371363, Cincinnati, OH 45222, USA

**Terrade Corp., A Division of Tech/Ops, Inc.**
2 Science Rd., Glenwood, Illinois 60425, USA

**TSI GmbH**
Zeppelinstr. 1, D-5100 Aachen

**Universal Assoc., Inc.**
Concord, Ontario, Canada, L4K 1B5

**Vent Axia Ltd.**
Fleming Way, Crawley, West Sussex RH10 2NN, GB

Included in the Conference materials (not in the exhibition):

**E & T. Energie- und Transporttechnik GmbH**
Wasserstr. 12, D-2900 Oldenburg

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# General Information

**Smoking**

Smoking [illegible] ... completely.

**Bank and Post Office**

The Sparkasse der Stadt Berlin West (West Berlin Savings Bank) [illegible] ... usual conditions. Opening hours: Monday – Friday [illegible] Saturday [illegible]

On the [illegible] side of the [illegible] ... Monday – Friday [illegible]

**Telephone**

[illegible] ... from the Post Office.

**Message Board**

A Message Board is located in the foyer [illegible]

**Cloakrooms/Luggage**

The cloakrooms are located [illegible] the entrance [illegible] for the fee. Luggage may be [illegible] for short periods.

**First Aid**

A first aid room is located in the entrance hall next to the exit to the car park. The internal telephone number is [illegible]

# Scientific Programme Overview

For exact times and locations [illegible] detailed programme

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| Morning | Registration | [illegible] | [illegible] | [illegible] | [illegible] |
| | Opening Ceremony | [illegible] | [illegible] | [illegible] | [illegible] |
| | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

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# General Information

**Submission of Slides**

All speakers are kindly requested to submit their slides to the Slide Check Point next to the Registration Counter. Slides should be delivered at least two hours before the beginning of the respective session. They should be collected on the same day until 18:00 hours.

Overheads should be kept only for speakers to be presented from the podium.

**Exhibition**

The Conference is augmented by an Exhibition of equipment, scientific instrumentation and special products, which is in the foyer of Hall 5. Visiting of the Exhibition is highly recommended to the participants. Opening hours are daily from 8:30 to 18:00 hours. A list of exhibitors is contained in this Programme.

**Social and Supporting Programmes**

Tickets for the Social Programme and the Supporting Programme are available at the Registration Counter.

**Food and Beverages**

Together with the Conference material participants receive eight vouchers for coffee or tea. These vouchers may be used at any of the snack bars of the ICC:

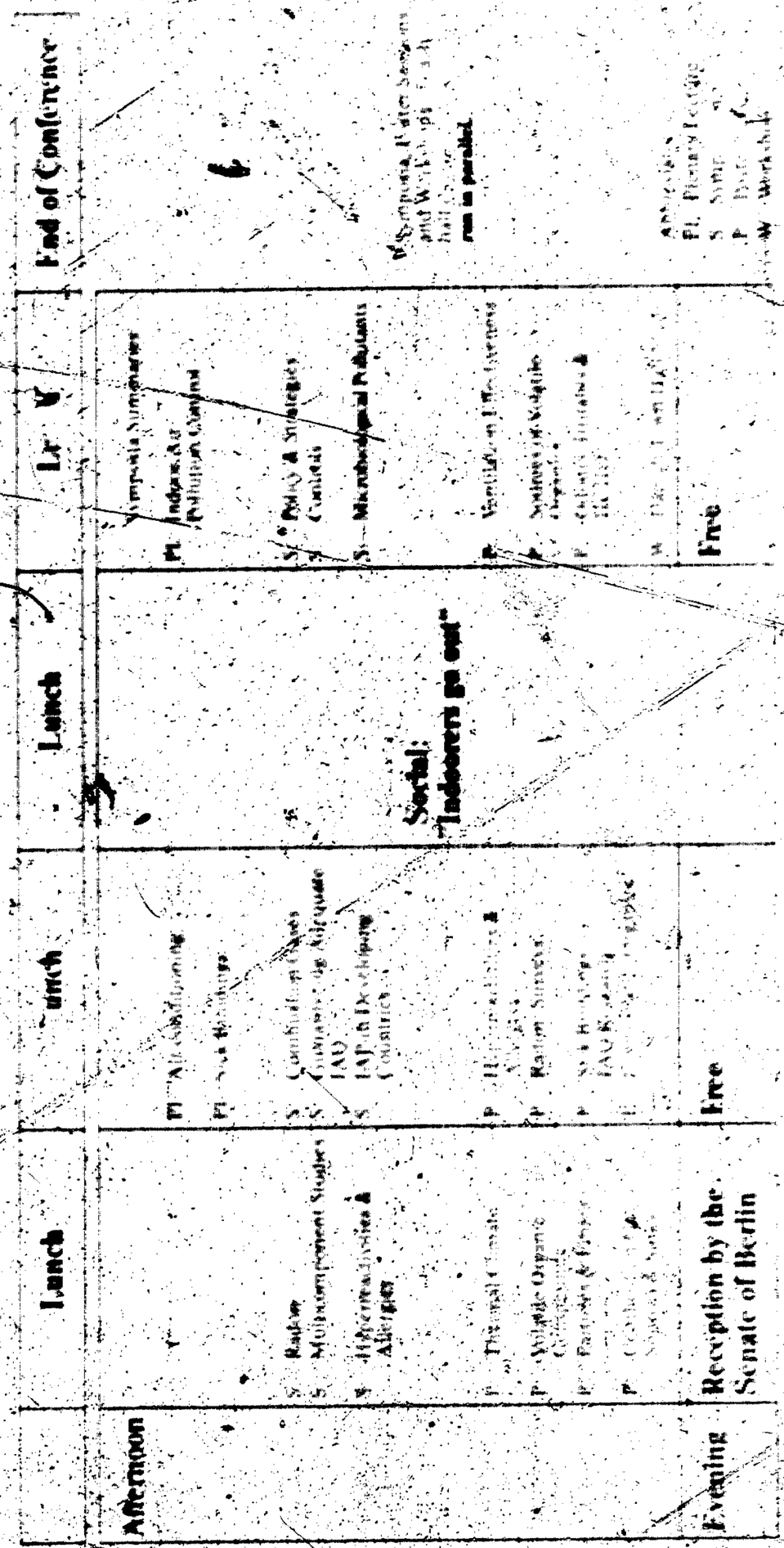
Meeting Point bar in the entrance hall next to the Registration Counter

Conference bar in the foyer of Hall 3 in the Exhibition area

Coffee booth in the main foyer next to the poster area.

During lunch time snacks are available at the Conference bar in the foyer of Hall 3. In addition, the ICC offers a self-service restaurant ("Bistro") in the entrance hall behind the Registration Counter, and the more fashionable "Parlament" restaurant. The Registration Counter is at your disposition for a list of restaurants outside the ICC.

At the time of printing of this Programme, the possibility of spending your lunch break outdoors on the Roof Terrace was not excluded. Please try!

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# Scientific Programme

## Sunday, 16 August 1987

**15:00 – 20:00** **Registration**
International Congress Centre ICC Berlin
Counter, Entrance Hall

**18:00 – 20:00** **Get-Together Party**
ICC, Dachgarten (Roof Garden)

# General Information

**Name Tags**
Conference participants are requested to wear their name tags at all times within the ICC, since admission to all events will be controlled. The colours of the tags have the following meaning:

| | |
|---|---|
| Yellow: | Conference participant |
| Blue: | Chairman, Symposium Organizer |
| Green: | Accompanying person |
| Red: | Staff |

**Conference Language**
The official language of the Conference is English. A simultaneous translation into and from German is provided for all events in Hall 3.

**Proceedings**
The Proceedings of the Conference are printed in 4 volumes. One full set is delivered free of charge to every fully registered participant. Additional sets may be obtained at the Registration Counter for DM 124 each. Volumes will not be sold separately.

**List of Participants**
A list of participants is enclosed in the Conference material. A supplement will be available at the Registration Counter on Friday, 21 August 1987.

**Poster Sessions**
A short oral introduction (5 min.) of each poster at a session will be given in the respective lecture hall. The subsequent discussion of the session's posters will take place in one of the areas from A to H, where posters will be on permanent display. To identify the location of the different areas, please refer to the information sheet included in your Conference material.

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## General Information

**Venue of the Conference**
Internationales Congress Centrum ICC Berlin (West)
Messedamm 22 (Entrance Neue Kantstraße)
D-1000 Berlin 19
Telephone: (0)30 30 38-31 58

**Registration Counter/Conference Secretariat during the Conference**
The Registration Counter is located on the "blue" side in the entrance hall of the ICC Berlin and is open at the following hours:

| | | |
|---|---|---|
| Sunday, | 16 August 1987 | 15:00 – 20:00 hours |
| Monday, | 17 August 1987 | until |
| Thursday, | 20 August 1987 | 8:00 – 18:00 hours |
| Friday, | 21 August 1987 | 8:00 – 13:00 hours |

The Registration Counter provides all kinds of support for travel arrangements, room reservations and information concerning the city's cultural events.

After the Conference, the address of the Conference Secretariat will be the usual one:

CPO Hanser Service GmbH
Schaumburgallee 12
D-1000 Berlin 19
Telephone: (030) 305 31 31
Telefax: (030) 305 73 91
Telex: 186 111 cpo d

**Official Carrier**
PAN AM is the official airline of INDOOR AIR '87

**Conference Fees**

| | |
|---|---|
| Participant | DM 750 |
| Author (one per paper) | DM 350 |
| Accompanying Person (without access to Scientific Sessions) | DM 150 |

## Monday, 17 August 1987

**10:00** **Opening Ceremony**, Saal 3 (Hall 3)

Opening Addresses by

**Martin Grüner**, Parliamentary State Secretary Ministry for the Environment, Nature Conservation and Reactor Safety, Bonn (D)
**Ulf Fink**, Senator for Health and Social Services Berlin (D)
**George R. Bishop**, Professor Joint Research Centre of the European Communities, Ispra (I)
**Michael J. Suess**, Dr. World Health Organisation, Copenhagen (DK)

**Plenary Lectures**, Saal 3 (Hall 3)

**11:30** **The Determination of Health Effects of Indoor Air Pollution**
J. A. J. Stolwijk, Professor, New Haven (USA)

**12:00** **Allergens in the Indoor Environment**
W. Jorde, Dr., Mönchengladbach (D)

**14:00** **Symposium**, Saal 3 (Hall 3)

**Radon: A Solvable Problem?**
Organizer: A. V. Nero Jr., Dr., Berkeley (USA)
Chair: O. Castren, Dr., Helsinki (SF)

Presentations (15 min. each):

- Castren O., Voutilainen A., Mäkeläinen I.
  A Seeking Strategy for High Indoor Radon Concentrations
- Steck D.J.
  Geological Variation of Radon Sources and Indoor Radon along the Southwestern Edge of the Canadian Shield
- Sextro R.G., Harrison J., Moed B.A., Revzan K.L., Turk B.H., Grimsrud D.T., Nero A.V., Sanchez D.C., Teichman K.Y.
  An Intensive Study of Radon and Remedial Measures in New Jersey Homes: Preliminary Results

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## Monday, 17 August 1987

- Eastmann R.C., Nagda N.L., Harper J.P.
  Radon Mitigation Through Residential Pressurization Control Strategy
- Osborne M.C.
  Resolving the Radon Problem in Clinton, New Jersey, Houses
- Arvela H., Winqvist K.
  A Model for Indoor Radon Variations
- Fisk W.J., Mowris R.J.
  The Impacts of Balanced and Exhaust Mechanical Ventilation on Indoor Radon
- Hopke P.K., Chu K.-D.
  The Neutralization Behavior of Po-218 in Indoor Air

**16:00** **Break**

**16:30** Discussion

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**14:00** **Symposium**, Saal 4/5 (Room 4/5)

**Multicomponent Field and Laboratory Studies: Exposure and Health Effects**
Organizer: J. Spengler, Professor, Boston (USA)
Chair: D. Magee, Dr., Kuala Lumpur (Malaysia)

Presentations (15 min. each)

- Quackenboss J.J., Lebowitz M.D., Hayes C.
  Epidemiological Study of Respiratory Responses to Indoor-Outside Air Quality
- Glaser U., Hochrainer D., Muller J., Otto F.
  An Experimental Animal Study for Risk Assessment of Indoor Air Pollutants
- Englert N., Prescher K.-E., Seifert B.
  Indoor Air Quality and Respiratory Diseases in Children
- Sega K., Fugas M.
  A Health Effect Oriented Multipollutant Human Exposure Study
- Dockery D.W., Spengler J.D., Speizer F.E., Ferris Jr. B.G., Ware J.H., Brunekreef B.
  Associations of Health Status with Indicators of Indoor Air Pollution from an Epidemiologic Study in Six U.S. Cities
- Grimsrud D.T., Turk B.H., Prill R.J., Harrison J., Revzan K.L.
  Effects of House Weatherization on Indoor Air Quality

## Supporting Programme

### Friday, 21 August 1987

**9:00 – 13:00** **Royal Porcelain KPM**
We will drive to the "Königliche Porzellan Manufaktur (KPM)". It is the second oldest porcelain manufacturing company in Germany founded in 1751. During our tour through the factory, the manufacturing and production process of fine porcelain will be shown and explained. The porcelain creations of the KPM from the Art Nouveau period through the 1930's will be particularly emphasized.
Not far from the KPM, a "Historical Fair" has been created as part of the "750-year Celebration". The history of Berlin amusements and entertainment has been called to life again and can be enjoyed in this re-creation of old Berlin: Kaiser Wilhelm's target shooting gallery, the Laterna Magica, the Circus at the Brandenburg Gate, and many lovingly restored stands and rides.
You may stroll through the Fair as long as you like, or return with us to the ICC or your hotel.
Tour begins at ICC and ends at ICC or hotels in the city centre.
Price per person: DM 26.

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# Supporting Programme

## Thursday, 20 August 1987

**8:30 - 19:00** **Excursion to Potsdam**
We will travel by deluxe motor coach to Potsdam, the city which best reflects the brilliance of Prussian history in many different periods. After a city sightseeing tour, we will visit Sanssouci Park and Palace, Palace Cecilienhof, where the Potsdam Agreement was signed, and either the New Palace or Charlottenhof Palace. During our excursion, we will have lunch together at a typical local restaurant, and enjoy a popular German custom, "coffee and cake", at one of Potsdam's cafés in the afternoon.
Tour begins at ICC and ends at ICC or hotels in the city centre.
Price per person: DM 105.

**9:30 - 12:30** **Visit to the Dahlem Museum**
We will go by deluxe motor coach to the Dahlem Museum, located in Berlin's elegant suburban district Dahlem. The collection of the Picture Gallery is one of the most important in Germany and contains masterpieces from the 13th to 18th centuries. One of the most beautiful collections is of 17th century Dutch painting, with works of Rembrandt, Vermeer, Frans Hals, Rubens and van Dyck.
The Sculpture Gallery collection contains many masterpieces of the occidental art tradition, including an early Christian Byzantine collection, sculpture from the early and middle Medieval period, important examples of miniature art, and a collection of 19th century sculpture.
We will be guided through the Dahlem Museum in small groups by expert museum guides.
Tour begins and ends at ICC.
Price per person: DM 26.

## Monday, 17 August 1987

- Harper J.P., Dudney C.S., Hawthorne A.R., Spengler J.D.
  Energy Use/Weatherization and Indoor Air Quality: Field Study Results
- Spengler J.D., Ware J., Speizer F., Ferris B., Dockery D., Lebret E., Brunekreef B.
  Harvard's Indoor Air Quality Respiratory Health Study

**16:00** **Break**

**16:30** Discussion

**14:00** **Symposium**, Saal 7 (Room 7)

**Hyperreactivities and Allergies**
Organizer: H. Magnussen, Professor, Großhansdorf (D)
Chair: C. Reed, Professor, Rochester (USA)

Presentations (15 min. each):

- Stock T.H., Morandi M.T.
  Characterization of Aeroallergen Concentrations in Indoor and Outdoor Microenvironments
- Irie T., Ikeda K., Komine H., Takano A., Sakaguchi M., Inoue T., Kawashima Y., Yoshikawa M.
  Relation between Childhood Asthma and Indoor Environmental Elements in Dwellings
- Hansen L., Bach E., Kaas Ibsen K., Østerballe O.
  Carpeting in Schools as an Indoor Pollutant
- Kniest F.M.
  Colorimetric Quantification of Inhalant Allergen Sources in House Dust
- Pauli G., Bessot J.C., Tenabene A., Kairouani N.
  Indoor Mite Pollution and Mite Asthma
- Bischoff E.
  Sources of Pollution of Indoor Air by Mite Allergen Containing House Dust
- van Bronswijk J.E.M.H.
  Towards Hygienic Standards for the Allergenicity of the Indoor Environment

**15:45** **Break**

**16:15** Discussion

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## Monday, 17 August 1987

**14:00** **Poster Session**, Saal 6 (Room 6)

**Thermal Climate and Comfort**
Co-Chairmensons
B.W. Olesen, Dr., Lyngby (DK)
D.N. Phong, Professor, Hanoi (P.R. Vietnam)

**Presentations** (5 min. each)

- Berglund L.G., Fobelets A.P.
  Floor Drafts from Cold Walls
- Gothe C.-J., Ancker K., Brunström R., Holm S.-, Langworth S.
  Relative Humidity, Temperature and Subjective Perceptions of "Dry Air"
- Halahyja M., Pirtel L.
  Operative Temperature – The Most Suitable Way for Practical Civil Engineering?
- Hygge S.
  Interactions of Noise and Thermal Factors on Human Behavior
- Jokl M.V.
  An New "COMECON" Standard for Thermal Comfort within Residential and Civic Buildings
- Lakomy T.
  Experimental Results of an Influence of Air and Radiant Temperatures on Men Thermal Sensations in Flats
- Lord D.
  Archetypes of Environmental Tempering: The Cultural Significance of Indoor Air Quality
- Mayer E.
  Air Velocity and Thermal Comfort
- Olesen B.W.
  A New Nordic Standard Proposal for Measuring the Thermal Characteristics of Clothing
- Petras D.
  Subjective Evaluation of Thermal Comfort and its Relation to Energy Consumption for Heating in Dwellings
- Sagae A., Ohara S., Togari S., Nagatomo M.
  Estimation of Indoor Thermal Environment in Office Spaces
- Tanabe S.-I., Kimura K.-I., Hara T., Akimoto T.
  Effects of Air Movement on Thermal Comfort During the Summer Season

## Supporting Programme

## Tuesday, 18 August 1987

**20:00** **"Zauber Zauber"**
**Theater des Westens**
The art of magic was still a popular entertainment and cultural attraction during the first half of this century, and had its own theatres and international celebrities. But this art is slowly dying out in a world in which pragmatism, science and rationality have become ever more important.
The magic show "Zauber Zauber" brings back this almost forgotten tradition to its audience.
"Zauber Zauber" is something more than simple entertainment, though it is indeed fascinating entertainment. It is the revival of an old cultural and historical tradition, and the art of believing in "miracles".
Price per person: DM 42.

## Wednesday, 19 August 1987

**8:30 – 13:00** **City Sightseeing Tour Berlin (East)**
We will visit the historical centre of Berlin and be introduced to the city during a guided bus tour. Many historical buildings have been restored in time for the "750-year Celebration". During our sightseeing trip, you will see such famous buildings as the State Opera House, Humboldt University, the Museum of German History (formerly the Zeughaus), the City Hall, the Cathedral . . . The tour includes a visit to the Pergamon Museum which houses the famous Pergamon Altar, the Market Gate of Milet, and the Ischtar Gate of ancient Babylonia.
Tour begins and ends at ICC.
Price per person: DM 46.

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# Supporting Programme

## Monday, 17 August 1987

**14:00 – 17:00** **Big City Sightseeing Tour of Berlin (West)**
In a deluxe motor coach, you will see many of the highlights of Berlin as we drive through the city. Kurfürstendamm, Gedächtniskirche (Memorial Church), Schöneberg City Hall, ... We will visit the district of Kreuzberg and see the beautifully restored housing projects "Riehmers Hofgarten" and "Chamissoplatz", which have unique historical and architectural features. We will go on to see the Brandenburg Gate, the Reichstag, the Wall, Bellevue Palace, the Hansa Quarter, Charlottenburg Palace and the Olympic Stadium.
Tour begins and ends at ICC
Price per person: DM 28

## Tuesday, 18 August 1987

**9:30 – 16:00** **Berlin historic**
Our excursion begins with a visit to the Martin-Gropius-Building. Its 40 rooms currently house an exhibition on the history of Berlin, from its beginnings in the early 13th century up to the present day. This is the main historical exhibition of the "750-Year Celebration", which offers a comprehensive picture of the varied political and cultural development of what was once Germany's capital. After a guided tour of the exhibition, we will enjoy a light lunch in the museum restaurant. To round-out and complement our museum visit, we will take a city sightseeing tour in the afternoon through Berlin (West), which will highlight the cultural and historical sights of the city. This tour will be led by specially trained and knowlegeable guides, one whose special area is the history of Berlin, the other is an expert who will inform you about the Martin-Gropius-Building and its current exhibition.
Tour begins at ICC and ends at ICC or hotels in the city center.
Price per person: DM 98



## Monday, 17 August 1987

- Yilmaz Z.
  Design Principles for Thermally Comfortable Indoor Spaces
- Yoshino H., Matsumoto H., Makita K., Hasegawa T., Utsumi Y., Akabayashi S.-I.
  Investigation of Indoor Thermal Environment, Air Quality and Energy Consumption in Highly Insulated Detached Houses in Japan

**15:30** **Break**

**16:00** **Discussion at Poster Walls (Area F1)**

**14:00** **Poster Session**, Saal 8 (Room 8)

**Volatile Organic Compounds**
Co-Chairpersons:
L. Molhave, Dr., Arhus (DK)
J. Lewtas, Dr., Research Triangle Park (USA)

Presentations (5 min. each):

- Brugnone F., Perbellini L., Faccini G.B., Pasini F.
  Benzene in the Breath and Blood of General Public
- De Bortoli M., Knoppel H., Pecchio E., Vissers H.
  Performance of a Thermally Desorbable Diffusion Sampler for Personal and Indoor Air Monitoring
- Jungers R.H., Sheldon L.S.
  Characterization of Volatile Organic Chemicals in Public Access Buildings
- Mailahn W., Seifert B., Ullrich D.
  The Use of a Passive Sampler for the Simultaneous Determination of Long-Term Ventilation Rates and VOC Concentrations
- Matthews T.G., Thompson C.V., Wilson D.L., Hawthorne A.R., Mage D.T.
  Air Velocities Inside Domestic Environments: An Important Parameter for Passive Sampling
- Mierzwinski S., Breum N.O., Madsen Th.L.
  Personal Exposure due to Solvent Spillage on Clothing
- Pleil J.D., Oliver K.D., McClenny W.A.
  Time-Resolved Measurement of Indoor Exposure to Volatile Organic Compounds

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## Monday, 17 August 1987

- Ulrich D., Liu Z.-F., Seifert B.
  Assessment of the Indoor Air Concentration of an Organic Substance Emitted from a Continuous Source using Methyl Benzoate as an Example
- Vernooij A., Sate H., van Wijnen J.
  Organic Solvents in the Indoor Air of Ten Small Screen Printing Plants and Surrounding Houses
- Wallace L., Clayton C.A.
  Volatile Organic Compounds in 600 US Homes: Major Sources of Personal Exposure
- Wallace L., Jungers R., Sheldon L., Pellizzari E.
  Volatile Organic Chemicals in 10 Public-Access Buildings

**15:15** **Break**

**15:45** Discussion at the Poster Walls (Area A/I)

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**14:00** **Poster Session**, Saal 9 (Room 9)

**Particulate Matter and Fibres**
Co-Chairpersons:
H. Bossenmayer, Dr., Stuttgart (D);
J.J. Quackenboss, Dr., Tucson (USA)

Presentations (5 min. each):

- Aahkke C., Kahr O., Lundqvist G.R.
  Type of Floor Airborne and Settling Particulates in a Day-Care Institution
- Al-Muta, I.S.
  CO, Particulates, Lead Levels in the Indoor Environment in Riyadh, Saudi Arabia
- Rhyssen P., van de Loo H., Leadener B.P.
  Chamber and Field Studies of Respirable Suspended Particulate Deposition Rates Indoors
- Di Nardi S.R., Ludwig J., Neumann R.
  Monitoring Respirable Suspended Particles in the Indoor Environment
- Fujii S., Tanaka H., Kim K.Y., Hayakawa F.
  Measurements of Submicron Particles by CNC and Diffusion Battery

## Supporting Programme

In 1987, Berlin is commemorating its 750-year history as a city. A large number of special events (art and scientific exhibitions, music and city festivals) take place. Those who wish to participate at these events during the Conference or while staying a few days longer in Berlin, may obtain information about the programme of the "750-year Celebration" at the Registration Counter.

To book one of the following tours, please contact also the Registration Counter.

## Sunday, 16 August 1987

**16:30 - 18:00** **City Sightseeing Tour of Berlin (West)**
Early Birds can get an initial whiff of the famous "Berliner Luft", the Berlin atmosphere. During a short sightseeing tour through the centre of Berlin you will get an introduction to the city, and a first impression of what you can expect in the coming days. You will return to the ICC in time for the Get-together Party.
Tour begins and ends at ICC.
Price per person: DM 22.

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Monday 17 August 1987

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## Monday, 17 August 1987

14:00 **Poster Session** [illegible]

**Combustion Gases: Sources and Sinks**

Co-Chairpersons: [illegible]
B. Brunekreef [illegible], Wageningen (NL)
B. P. Leaderer, Professor, New Haven (USA)

Presentations ([illegible] min. each)

- Billick I. H., Nagda N. L.
  Reactive Decay of Nitrogen Dioxide
- [illegible], Davidson [illegible], Hutchinson C. T.
  [illegible] Gas Stove
  Emission [illegible] ([illegible] NO, NO)
- [illegible], Davidson C. T.
  [illegible] NO Loss Rates from
  Concentration Measurements in an Occupied
  Urban Residence
- [illegible]
  Emissions from Conventional Kerosene Stove
  Used in Indian Kitchen
- [illegible] Koutkov F.
  The [illegible] Nitrogen Oxides with
  [illegible] on Activated
  Carbon [illegible]
- [illegible] G. G., [illegible] R. N., [illegible] T. W.
  [illegible] R. W.
  Two-Zone Model [illegible] Air Exchange Rate
  and NO [illegible] Rates in a South
  [illegible] Residence [illegible] Air Quality Study
- [illegible]
  [illegible] for [illegible] NO
  [illegible] Gas Space Heaters in
  [illegible] Measurements
- [illegible] S. M.
  [illegible] NO [illegible] Range Top
  Burner [illegible] Rates
- [illegible]
  [illegible] Carbon Monoxide and Dioxide from
  [illegible] Water Heaters
- [illegible]
  [illegible] and Size Distribution of Residential
  Wood Smoke Particles
- [illegible]
  Solid and Gaseous Emissions from Wood Fired
  Boilers

## Social Programme

## Sunday, 16 August 1987

18:00-20:00 **[illegible] Party**
International Congress Centre ICC Berlin
[illegible]

## Monday, 17 August 1987

18:00 Departure by coach from the ICC Berlin

19:00 **Reception given by the Senate of Berlin**
in the "Reichstag" Building
(former House of Parliament)

Return by coach [illegible] to the city centre and ICC

## Wednesday, 19 August 1987

**Social: [illegible] go out**

16 Departure by coach from ICC and hotels [illegible]
Kempinski, [illegible]

We start by driving through part of [illegible]
Grunewald Forest to Berlin's famous [illegible]
lake, the Wannsee.

17:00 Departure by boat from the landing stage [illegible]
Wannsee Station [illegible]

We travel by ship on the Havel River to the old
quarter of the Spandau district. A short walk
brings us to the Spandau Citadel.

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## Friday, 21 August 1987

- ● McCarthy J., Spengler J., Chang B.H., Coultas D., Samet J.
  A Personal Monitoring Study to Assess Exposure to Environmental Tobacco Smoke
- ● Moschandreas D.J., Stetina T.Z.A., Gibbons R.D.
  Perception of Daily Cigarette Consumption
- ● Reckonagel H.
  Indoor Air Pollution through Smoking: A Challenge to Industrial Medicine
- ○ Reisnecker E., Korsgaard J., Lundqvist G.R.
  Tobacco Smoking and the Indoor Suspended Particulate Matter
- ○ Schlatter J., Wanner H.U.
  Strategies to Avoid Negative Health Effects of Passive Smoking
- ● Schmidt F.
  Passive Smoking as a Scientific, Political, Juridical and Economic Problem
- ● Ve Duc T., Harris C.K.
  Sidestream Tobacco Smoke Constituents in Indoor Air Modelled in an Experimental Chamber
- ○ Witorsch R., Witorsch P.
  Maternal Smoking and Pulmonary Performance in Children: A Critical Analysis

**11:00** **Break**

**11:30** Discussion at Poster Walls (Area D 5)

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**12:30** **Symposia Summaries**, Saal 3 (Hall 3)
(Symposia of Thursday Afternoon)
Chair: B. Berglund, Dr., Stockholm (S)

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**13:00** **End of Conference**

## Monday, 17 August 1987

- ● Sharma S.P., Parikh P.P., Dhirubhai P.C.
  Variation of Combustion Air and its Effect on the Performance of a Gas Stove
- ● Spicer C.W., Coutant R.W., Ward G.F., Joseph D.W., Gaynor A.J., Billick I.H.
  Rates and Mechanisms of NO₂ Removal From Indoor Air by Residential Materials
- ● Yamanaka S., Lusuno A.M., Spengler J.D., Ryan P.B., Billick I.H.
  Removal of Nitrogen Dioxide by Interior Materials

**15:30** **Break**

**16:00** Discussion at Poster Walls (Area C 3)

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**18:00** Departure by coach from ICC Berlin

**19:00** **Reception given by the Senate of Berlin at "Reichstag" building**
Return by coach to Bahnhof Zoo, some bars in the city centre and ICC

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Source: https://www.industrydocuments.ucsf.edu/docs/

## Tuesday, 18 August 1987

**8:30** **Symposia Summaries**, Saal 3 (Hall 3)
(Summary of [illegible])
Chair: B. Berglund, Dr. (Stockholm (S)

**Plenary Lecture**, Saal 3 (Hall 3)

**9:00** **What Architects Can do to Improve Indoor Air Quality**
H. Levin, Dr. Berkeley (USA)

**9:45** **Symposium**, Saal 3 (Hall 3)

**Thermal Climate and Comfort**
Organizer: D. Wyon, Dr. Gavle (S)
Chair: P.O. Fanger, Professor Lyngby (DK)

Presentations (15 min. each)

- Ohgake H., Frommler T., Beckert J.
  An Attempt to Define Thermal Comfort for [illegible] Compromised Patients on Artificial Respiration
- de Dear R.J., Ring J.W. Knudsen H.N.
  Petersen H., Mackenzie J., Fanger P.O.
  Thermal Response of Women Clothing During Humidity Transients
- Fanger P.O., Melikov A.K., Hanzawa H.
  Draughts and Turbulence
- Isoda N., Kasuyama T., Tsutsumi J.-I., Nishida [illegible]
  Estimation of Thermal Environment in a Naturally Ventilated Room with Windows Opened by Using Data from Full-Scale Measurements
- Sawachi T., [illegible], Kasuyama T., Tsutsumi J.-I., Nishida M.
  Experimental Study of Thermal Sensation of Human Body in Naturally Ventilated Rooms
- Bergner T., [illegible] A.P.
  Occupant Acceptance of Air Motion and Asymmetric Radiation in Neutral and Cool Environments
- Kapkenes [illegible], Bichone [illegible] R.
  Indoor Thermal Climate in Shops and Stores

## Friday, 21 August 1987

- Kurz C.
  Indoor Radon: The [illegible]
- Moss [illegible], [illegible] C., [illegible]
  The Influence of Ventilation to Rooms [illegible] Effective Dose Equivalent from Inhalation of Rn and their Short Lived Daughters
- Swedjemark G.A., Wahren J., Mäkitalo A., [illegible] W., [illegible]
  Experiences from Indoor Radon Daughter Limitation Schemes in Sweden
- Yokoyama S., [illegible]
  A Study of Indoor Radon and Radon Daughter Concentrations in Hokkaido, Japan

**11:00** **Break**

**11:30** **Discussion at Poster Walls** [illegible]

**10:00** **Poster Session**, Saal [illegible] (Room [illegible])

**Environmental Tobacco Smoke: Characterization and Field Studies**
Co-Chairpersons:
J.L. Repace, Dr. Washington (USA)
M.J. Suess, Dr. Copenhagen (DK)

Presentations (5 min. each)

- Coultas D.B., Samet J.M., Peake G.T., McCarthy J., Spengler J.
  Reliability and Validity of Questionnaire Assessment of Involuntary Tobacco Smoke Exposure
- Eudy L., Heavner D., Stancil M., Steichen [illegible], McConnell B.
  Measurement of Selected Constituents of Environmental Tobacco Smoke in a Winston-Salem, North Carolina Residence
- Hammond S.K., Coghlin J., Leaderer B.P.
  Field Study of Passive Smoking Exposure with Passive Sampling
- Klus H., Begutter H., Ball M., Intorp M.
  Environmental Tobacco Smoke in Real Life Situations


Source: https://www.industrydocuments.ucsf.edu/docs/pkhl0000

## Friday, 21 August 1987

- Ryan P.B., Spengler J.D., Treitman R.D., Soczek M.L., Yanagisawa Y., Wallace L.A., Billick I.H.
  Nitrogen Dioxide Exposure in Greater Boston: Evaluation of Personal Monitoring

10:45 **Break**

11:15 Discussion at Poster Walls (Area C 3)

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10:00 **Poster Session**, Saal 6 (Room 6)

**Radon: Sources, Interactions and Reduction Measures**

Co-Chairpersons

L.S. Quindos Poncela, Professor, Albuquerque (USA)

R.G. Sextro, Dr., Berkeley (USA)

Presentations (5 min. each)

- Burkart W., Crameri R.
  Increased Indoor Radon Levels Due to Actinide Containing Mineral Collections Displayed in Living Areas
- D'Ottavio T.W., Dietz R.N., Kunz C., Kothari B.
  Radon Source Rate Measurements Using Multiple Perfluorocarbon Tracers
- Dudney C.S., Hawthorne A.R., Bull L.A., Cohen M.A., Dalton C.R., Ortbaugh C.T., Harper J.P.
  Radon Levels in 300 Houses in Roane County, Tennessee
- Hartwell T.D., Perritt R.L., Sheldon L.S., Cox B.G., Smith M.L., Rizzuto J.E.
  Distribution of Radon Levels in New York State Homes
- Ikeda K., Yoshizawa S., Komure H., Kamimaki S., Abe S.
  Experimental Studies on the Indoor Radon and Radon Daughter Concentrations Build-up in Japanese Houses
- Kokotti H., Raunemaa T.
  Indoor Radon in Three Similar Two-Story Houses with Different Ventilation Systems

## Tuesday, 18 August 1987

- Phong D.N.
  Effects of the Hot-Humid Conditions on Physiological Indices of Young People in Housing Areas in Vietnam

11:45 **Break**

12:15 Discussion

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9:45 **Symposium**, Saal 4/5 (Room 4/5)

**Particulate Matter and Fibres: Sources, Characterization and Health Effects**

Organizer: M. Lippmann, Dr., New York [illegible]

Chair: F. Speizer, Dr., [illegible]

Presentations (15 min. each)

- Fishbein L., O'Neill I.K.
  Metals in Indoor Environments: [illegible] Aspects of Biological [illegible]
- Krause C., Dahle P., [illegible] V., Schulz C., Wolter R.
  Metal Concentrations in Indoor Dust Samples from Germany [illegible]
- [illegible]
  The Use of [illegible] Lead in Calculating [illegible]
- Marples H., [illegible]
  Indoor Measurements of Mineral Fibres
- Boon P.M., Rossman T.G., [illegible]
  The [illegible] Contribution of [illegible] to Indoor Respirable Suspended Particles
- Singer J.D., [illegible]
  Water Soluble Salts: A Comparison of Indoor/Outdoor Concentrations and Deposition Velocities at Three Office Sites
- Quackenboss J.J., Lebowitz M.D., Crutchfield C.D., Burchette D.
  Indoor-Outdoor Relationships for Particulate Matter and Verification of Exposure Classifications

11:30 **Break**

12:00 Discussion

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Source: https://www.industrydocuments.ucsf.edu/docs/pkkl0000

# Tuesday, 18 August 1987

**9:45** **Symposium**, Saal 7 (Room 7)

**Volatile Organic Compounds: Characterization and Health Effects**
Organizer: H. Knöppel, Dr., Ispra (I)
Chair: H. Greim, Professor, München (D)

Presentations (15 min. each):

- Knoergaard S., Malhave L., Pedersen O.F.
  Human Reactions to Indoor Air Pollution n-Decane
- Krause C., Mailahn W., Nagel R., Schulz C., Seifert B., Ullrich D.
  Occurrence of Volatile Organic Compounds in the Air of 500 Homes in the Federal Republic of Germany
- Seifert B., Schulz C., Steinbach I., Ullrich D., Mailahn W.
  Seasonal Variation of Concentrations of Volatile Organic Compounds in Selected German Homes
- Hartwell T.D., Pellizzari E.D., Perritt R.L., Whitmore R.W., Zelon H.S.
  Comparison of Volatile Organic Levels Between Sites and Seasons for the Total Exposure Assessment Methodology Study
- Wallace L.A., Hartwell T.D., Perritt K., Sheldon L.S., Michael L., Pellizzari E.D.
  The Influence of Personal Activities on Exposure to Volatile Organic Compounds
- Kluyt J., Fast T., Boleij J.S.M., van de Wiel H., Bloemen H.
  The Relation between Soil Pollution and Indoor Air Pollution with Volatile Organic Compounds
- Wolkoff P.
  Sampling of VOC Indoors Under Conditions of High Time Resolution

**11:30** **Break**

**12:00** **Discussion**

# Friday, 21 August 1987

**8:00** **Symposia Summaries**, Saal 3 (Hall 3)
(Symposia of Thursday Morning)
Chair: B. Berglund, Dr., Stockholm (S)

**Plenary Lectures**, Saal 3 (Hall 3)

**8:30** **Public Policy Implications of Exposure to Indoor Pollution**
K. Sexton, Dr., Washington (USA)

**9:00** **Assessing the Relative Risk of Indoor Exposures and Hazards, and Future Needs**
Th. Lindvall, Professor, Stockholm (S)

**10:00** **Poster Session**, Saal 4/5 (Room 4/5)

**Combustion Gases: Exposure and Health Effects**
Co-Chairpersons:
W. Jedrychowski, Professor, Cracow (PL)
J. Spengler, Professor, Boston (USA)

Presentations (5 min. each):

- Houthuijs D., Remijn B., Brunekreef B., de Koning R.
  Exposure to Nitrogen Dioxide and Tobacco Smoke and Respiratory Health of Children
- Jedrychowski W., Tobiasz-Adamczyk B., Mroz E., Gomola K.
  What Effect Does Indoor Air Pollution due to Domestic Cooking Have on the Chest Problems of Elderly Women?
- Lewtas J., Claxton L.D., Mumford J.L.
  Human Exposure to Mutagens from Indoor Combustion Sources
- McCarthy S.M., Yarmac R.F., Yocom J.E.
  Indoor Nitrogen Dioxide Exposure: The Contribution from Unvented Gas Space Heaters
- Morandi M.T., Stock T.H.
  The Estimation of Personal Exposure to Residential Gaseous Air Pollutants
- Qureshi F., Todd J.
  Effects of Domestic Wood-Burning on Indoor Air Quality - An Overview

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Source: https://www.industrydocuments.ucsf.edu/docs/jkn0000

## Tuesday, 18 August 1987

**9:45** **Poster Session**, Saal 6 (Room 6)

**Measures to Guarantee Adequate Indoor Air Quality**

Co-Chairpersons:
I.H. Billick, Dr., Chicago (USA)
J.M. Dave, Professor, New Delhi (IND)

Presentations (5 min. each):

- Alevantis L.E., Hayward S.B.
  A Computer-Controlled System for Measuring Building Air Exchange Rates Using Sulfur Hexafluoride as a Tracer Gas
- Bugai A.
  New Concept of Air Distribution in Operating Room
- Cole R.J., Sterling E.M.
  Designing Office Buildings for Improved Environmental Quality
- Drangsholt F.
  Ventilation by Demand
- Fuhi S., Boelman E.C.
  Characteristics of Concentration Changes in a Clean Room
- Georgakis K.S., Smith J.W., Goodfellow H.D.
  The Use of Tracer Gas and Analytical Models to Study Dilution and Recirculation from Laboratories
- Guttmann K.
  Proposed Method of Indoor Air Pollution Control by Dilution with Outside Air
- Hagenbruch D.
  Fan Standards in Clean-Room Technology
- Matthews T.G., Thompson C.V., Monur K.R., Dudney C.S., Hawthorne A.R., Harper J.P., Wilhams A.B.
  Impact of HVAC Operation and Leakage on Ventilation and Intercompartment Transport: Studies in a Research House and 39 Tennessee Valley Homes
- Tanaka T., Matsumoto T.
  Evaluation of Performance of VAV System in Super Energy Conservation Building

## Thursday, 20 August 1987

- Wade Jr. T.J., Schachter E.N., Tosun T., Leaderer B., Beck G.J.
  Assessment of Acute Pulmonary Effects of Formaldehyde in an Environmental Chamber Test Facility

**16:45** **Break**

**17:15** **Discussion at Poster Walls (Area H2)**

**15:15** **Workshop**, Saal 10 (Room 10)

**The Danish Town Hall Study**
Leader: P. Skov, Dr., Copenhagen (DK)

- Franck C., Skov P.
  Objective Signs of Eye Irritation in Buildings Suspected of Causing Indoor Climate Problems
- Valbjorn O., Skov P.
  Influence of Indoor Climate on the Sick Building Syndrome Prevalence
- Nielsen P.A.
  Potential Pollutants - Their Importance to the Sick Building Syndrome and Their Release Mechanism

**18:00** **Introducing the New President**, Saal 3 (Hall 3)

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Source: https://www.industrydocuments.ucsf.edu/docs/pkhl0090

## Tuesday, 18 August 1987

**11:00** **Break**

**11:30** **Discussion at Poster Walls (Area G I)**

**9:45** **Poster Session**, Saal 8 (Room 8)

**"Sick Buildings": Case Studies**

Co-Chairpersons
P.J. Dennis, Dr., Porton Down (GB)
O. Valbjorn, Dr., Horsholm (DK)

Presentations (5 min. each)

- Berglund B., Berglund U., Lindvall Th., Lundin L.
  Air Quality in a Sick Library over a Period of 16 Weeks
- Finnegan M.J., Pickering A.C.
  Prevalence of Symptoms of the Sick Building Syndrome in Buildings without Expressed Dissatisfaction
- Finnegan M.J., Pickering A.C., Gill F.S., Ashton I.
  Negative Ions and the Sick Building Syndrome
- Hedge A., Sterling T.M., Collett C.W., Mueller B., Konson R.
  Indoor Air Quality Investigation as Psychological Stressor
- Helsing K.J., Billings C.E., Conde J.
  Cure of a Sick Building: A Case Study
- Konopinski V.J.
  Gaseous Pollutants in a New Office Building
- Morris L., Hawkins L.
  The Role of Stress in the Sick Building Syndrome
- Norbäck D., Torgén M.
  A Longitudinal Study of Symptoms Associated with Wall-to-Wall Carpets and Electrostatic Charge in Swedish School Building
- Pollmann L., Pollmann B.
  Observations on the "Sick Building Syndrome" in a Newly Built Large Hospital
- Potting J., van de Sandt P., ter Haar Romeny-Wachter L., Brunekreef B., Boleij J.S.M.
  Health Complaints, CO-Levels and Indoor Climate in Dutch Schools

## Thursday, 20 August 1987

**15:15** **Poster Session**, Saal 9 (Room 9)

**Odours, Irritants and Formaldehyde**

Co-Chairpersons
T. Engen, Professor, Providence (USA)
M. Hangartner, Dr., Zürich (CH)

Presentations (5 min. each)

- Ahlstrom R., Berglund B., Berglund U., Engen T., Lindvall T.
  Odor Perception in Smokers, Non-Smokers and Passive Smokers
- Arundel A., Collett C., Sterling E., Sterling J.
  Low Relative Humidity and Eye, Nose, Throat and Skin Irritation
- Berglund B., Berglund U., Hogman L., Johansson I., Lindvall T.
  The Psychophysics of Formaldehyde Odor
- Cain W.S.
  A Functional Index of Human Sensory Irritation
- Crump D.R., Gardiner D.
  Sources and Concentrations of Aldehydes and Ketones in Indoor Environments in the U.K.
- Engen T.
  Adaptation to Odors
- Howieth S., C.T., Newton L.R., Stevens K.R.
  Formaldehyde: A Case Study
- Kelter R., Hummel P.
  Air and Water Analysis of Formaldehyde and of Other Aldehydes
- Konopinski V.J.
  Formaldehyde Sensitivity and Control
- Marutzky R.
  Formaldehyde Injuries in Prefabricated Houses, Causes, Prevention and Reduction
- Meyer C.B., Endrody E., Sundin B., Mansson B.
  Variations of Formaldehyde Exposure in Homes and Office Buildings
- Raab K.H.
  Risk Assessment of Odor Counteraction
- Shah H., Oehme M.
  Convenient Method for Determination of Sub-ppb to ppm Levels of C1-C7 Aldehydes Using Solid Adsorbent Sampling

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Source: https://www.industrydocuments.ucsf.edu/docs/pkhl0000

## Tuesday, 18 August 1987

**11:00** **Break**

**11:30** Discussion at Poster Walls (Area D.1)

**9:45** **Poster Session**, Saal 10 (Room 10)

**Combustion Gases: Analysis and Concentration Levels**

Co-Chairpersons:
E. Lahmann, Professor, Berlin (D)
D. Moschandreas, Dr., Chicago (USA)

Presentations (5 min. each):

- Atkins D.H.F., Law D.V.
  Indoor-Outdoor Nitrogen Dioxide Concentration Ratios for Homes with Gas and Electric Cooking
- Baker P.E., Cunningham S.J., Becker E.W., Colome S.D., Wilson A.L.
  Evaluation of Housing and Appliance Characteristics Associated with Elevated Indoor Levels of Nitrogen Dioxide
- Baker P.E., Cunningham S.J., Becker E.W., Colome S.D., Wilson A.L.
  An Overview of the Residential Indoor Air Quality Characterization Study of Nitrogen Dioxide
- Colome S.D., Lambert W.E., Castaneda N.
  Performance Characteristics of Palmes Diffusion Tubes Used for Measurement of Nitrogen Dioxide Outside Residential Sites
- Colome S.D., Wilson A.L., Becker E.W., Cunningham S.J., Baker P.E.
  Analysis of Factors Associated with Indoor Residential Nitrogen Dioxide: Multivariate Regression Results
- Colome S.D., Wilson A.L., Becker E.W., Cunningham S.J., Baker, P.E.
  Temporal Evaluation of Nitrogen Dioxide in Thirty Seven Residences
- Goldstein I.F., Andrews H.L., Bodian C., Keller G.
  Variability in Nitrogen Dioxide Readings Within and Between New York Inner-City Apartments
- Hemphill C.P., Ryan P.B., Brinck L.H., Nagda N.L., Koontz M.D., Fortmann R.C.
  Estimation of Nitrogen Dioxide Concentrations in Homes Equipped with Unvented Gas Space Heaters

## Thursday, 20 August 1987

**15:15** **Poster Session**, Saal 8 (Room 8)

**Sources of Volatile Organic Compounds and their Emissions**

Co-Chairpersons:
H. Ozkaynak, Dr., Cambridge (USA)
M. Sonnenborn, Dr., Berlin (D)

Presentations (5 min. each):

- Gustafsson H.N.O.
  Proposal of an „Euro-Chamber" for Testing Formaldehyde and Other Indoor Air Pollutants
- Levin H.
  A Procedure Used to Evaluate Building Materials and Furnishings for a Large Office Building
- Ohrbach K.-H., Matuschek G., Kettrup A.
  Pyrolysis of Polymeric Materials for Construction, Room, Decoration and Insulation
- Reist P.C., Reaves J.C., White J.B.
  Developmental Status of the Indoor Air Source Emissions Database
- Rothweiler H., Knuth R., Schlatter C.
  Formaldehyde in Indoor Air
- Sheldon L.S., Michael L.C., Pellizzari E.D., Wallace L.
  Use of a Portable Gas Chromatograph for Identifying Sources of Volatile Organics in Indoor Air
- van der Wal J.F., Moons A.M.M., Steenlage K.
  Thermal Insulation as a Source of Air Pollution
- White J.B., Leaderer B.P., Boone P.M., Hammond S.K.
  Characterization of Particle and Organic Emissions from Unvented Kerosene Space Heaters
- Wolkoff P., Nielsen G.D.
  Carbonless Copy Paper as a Potential Non-Building Indoor Irritant

**16:30** **Break**

**17:00** **Discussion at Poster Walls (Area A.2)**

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Source: https://www.industrydocuments.ucsf.edu/docs/pknk0000

## Tuesday, 18 August 1987

- Kaar [illegible], [illegible] M.S., Lawrence J.R.
  [illegible] Air Pollution Resulting from Wood Burning Appliance Use
- Koo [illegible], Nair [illegible]
  Sur[illegible] $NO_2$ Concentrations
- Lebr[illegible] E., [illegible] D., [illegible], Brunekreef B.
  Re[illegible] Concentration Measurements of $CO_2$ and $NO_2$ [illegible] Homes
- Hor[illegible] K.H.
  Monitoring of Inorganic Air Contaminants in Indoor Environments by Direct Reading Diffusion Tubes
- Stet[illegible] J.E., Chan[illegible] S.C.
  Portable Monitor for the Measurement of Indoor $NO_2$ Concentrations
- Phu[illegible] G.D.
  A [illegible] Study of Nitrogen Oxide Levels Inside and Outside an International Airport Terminal
- Wilson A.[illegible], Colome S.D., Baker P.E., Cunningham S.J., Becker E.W., Bope W.G.
  Comparison of Passive and Chemiluminescence Monitors for Determining One-Week Average Nitrogen Dioxide Concentrations

**11:15** **Break**

**11:45** **Discussion at Poster Walls (Area C 2)**

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**Plenary Lectures**, Saal 3 (Hall 3)

**14:00** **Air-conditioning: New Horizons – New Opportunities**
H. Esdorn, Professor, Berlin (D)

**14:30** **A Solution to the Sick Building Mystery**
P.O. Fanger, Professor, Lyngby (DK)

## Thursday, 20 August 1987

**15:15** **Poster Session**, Saal 6 (Room 6)

**Ventilation Effectiveness**

Co-Chairpersons:
E. Mayer, Dr., Holzkirchen (D)
M. Sandberg, Dr., Gävle (S)

Presentations (5 min. each)

- Bächlin W.
  Pressure Inside Buildings – A Dominant Parameter for Calculating Effective Natural Ventilation
- Fail [illegible], Panzhauser E.
  Natural Shaft Ventilation – Measurement, Simulation, Contribution to Basic Ventilation
- Fitzner K.
  Air Outlets for Displacement Flow and Their Influence on the Flow Pattern With Various Kinds of Heat Sources
- Ham K., Trümper H.
  The Relations of Air Humidity in Dwellings at Different Ventilation Systems (Natural & Mechanical)
- Hanssen S.O., Mathisen H.M.
  Sick Buildings – A Ventilation Problem?
- Kubo T., Fujii S., Hayakawa I.
  On the Performance of Turbulent Airflow Clean Rooms Based on Airborne Particle Counts in a Model Room
- Narasaki M., Yamanaka T., Higuchi M.
  Influence of Turbulent Wind on Ventilation
- Niemelä R., Aalto H., Tossavainen A.
  Evaluation of Low-Cost Tracer Techniques for Measuring Air Exchange Rates in Buildings
- Norell L.
  Conversion of a Natural Draught Ventilation System to Mechanical Exhaust with Heat Pump – A Case Study
- Olsson H.
  Increased Ventilation Efficiency in Rooms
- Vercammen M., Leaderer B.P., Dietz R.N.
  Influence of Airflow on the Performance of the Perfluorocarbon Tracer Technique for Measuring Ventilation Rates

**16:15** **Break**

**16:45** Discussion at Poster Walls (Area G 2)

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Source: https://www.industrydocuments.ucsf.edu/docs/phhl0000

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## Tuesday, 18 August 1987

15:15 **Symposium**, Saal 3 (Hall 3)

**Combustion Gases: Characterization and Health Effects**
Organizer: J. Boleij, Professor, Wageningen (NL)
Chair: K. Maeda, Professor, Tokyo (J)

Presentations (15 min. each):

- Traynor G.W., Aceti J.C., Apte M.G., Smith B.V., Green L.L., Smith-Reiser A., Novak K.M., Moses D.O.
  Macromodel for Assessing Indoor Exposures to Combustion-Generated Pollutants
- Harlos D.P., Spengler J.D., Billick I.
  Continuous Nitrogen Dioxide Monitoring During Cooking and Commuting: Personal and Stationary Exposures
- Colome S.D., Lambert W.E., Castaneda N.
  Determinants of Carbon Monoxide Exposure in Residences of Ischemic Heart Disease Patients
- Lebret E.
  Errors in Exposure Variables and Their Role in Obscuring Exposure-Response Relations: The Case of Indoor Exposure to Nitrogen Dioxide and Fine Particles
- Goldstein I.F., Andrews L.R., Lieber K., Foutrakis G., Kazembe F., Huang P., Hayes C.
  Acute Exposure to Nitrogen Dioxide and Pulmonary Function
- Berwick M., Leaderer B.P., Stolwijk J.A.J., Zagraniski R.T.
  Association between Nitrogen Dioxide Levels and Lower Respiratory Symptoms in Children Exposed to Unvented Combustion Sources
- Brunekreef B., Fischer P., Houthuijs D., Remijn B., Boleij J.
  Health Effects of Indoor $NO_2$ Pollution

17:00 **Break**

17:15 Discussion

## Thursday, 20 August 1987

15:15 **Symposium**, Saal 7 (Room 7)

**Microbiological Indoor Pollutants: Sources, Characterization and Health Effects**
Organizer: H. Rüden, Professor/
H.J. Monske, Dr., Berlin (D)
Chair: P. Morey, Dr., Golden Valley (USA)

Presentations (15 min. each):

- Tyndall R.L., Dudney C.S., Hawthorne A.R., Jernigan R., Ironside K., Metler P.
  Microflora of the Typical Home
- Morey P., Burge H., Chaugny M., Feeley J., Kreiss K., Otten J., Peterson K.
  Assessment of Non-Pathogenic Bioaerosols in Indoor Environments
- Yoshizawa S., Ide T., Sugawara F., Ozawo S., Kohsaka Y., Matsumae A.
  Microbiological Contamination From Air Conditioning Systems in Japanese Buildings
- Reponen T., Nevalainen A., Raunemaa T.
  Airborne Fungal Spore and Bacteria Levels in Finnish Homes with Different Ventilation Systems
- Holmberg K.
  Indoor Mould Exposure and Health Effects
- Jantunen M.J., Nevalainen A., Rytkonen A.-L., Pellikka M., Kalliokoski P.
  The Effect of Humidification on Indoor Air Fungal Spore Counts in Apartment Buildin
- Finnegan M.J., Pickering A.C., Davies P.S., Austwick P.K.C., Warhurst D.C.
  Amoebae: The Cause of Humidifier Fever?

17:00 **Break**

17:30 **Discussion**

## Tuesday, 18 August 1987

15:15 **Symposium**, Saal 4/5 (Room 4/5)

**Measures to Guarantee Adequate Indoor Air Quality**
Organizer: P.O. Fanger, Professor, Lyngby (DK)
Chair: O. Seppänen, Professor, Helsinki (SF)

Presentations (15 min. each):

- Komine H., Yoshizawa S., Tochihara Y., Kimura E., Ohnaka T.
  The Investigations on IAQ and Subjective Evaluations of Occupants for Indoor Environments in Japanese Office Buildings
- Savolainen T., Raunemaa T., Wellman K.
  Automatic Measurement and Data Collection System on Indoor Air Study at Three Small Housing Flats
- Jöki M.V., Rohles F.H.
  Improving Occupant Well-Being with Ionized Air
- Lundqvist G.R., Aalykke C.
  Airborne and Settling Particulates in a Day-Care Institution: Field and Exposure Chamber Studies
- Weschler C.J., Shields H.C.
  A Detailed Study of the Effects of Ventilation, Filtration and Outdoor Air on the Composition of Indoor Air at a Telephone Office Building
- Ancker K., Göthe C.-J., Bjurström R.
  A Quantitative Method for Measuring Air Recirculation
- Seppänen O.A.
  Ventilation and Indoor Air Quality
- Trepte L., Le Marié A.
  Minimum Ventilation Rates and Ventilation Strategies

17:15 **Break**

17:30 Discussion

## Thursday, 20 August 1987

17:00 **Break**

17:30 Discussion

15:15 **Symposium**, Saal 4/5 (Room 4/5)

**Controls: Source Modification and Air Cleaning**
Organizer: D. Grimsrud, Dr., Berkeley (USA)
Chair: J. Sundell, M.Sc., Solna (S)

Presentations (15 min. each):

- Godish T., Rouch J.
  Control of Residential Formaldehyde Levels by Source Treatment
- Nazaroff W.W., Cass G.R.
  Mass-Transfer Aspects of Pollutant Removal at Indoor Surfaces
- Klein C.F., Relwani S.M., Moschandreas D.J.
  Evaluation of a Proprietary Detector as an Indoor Air Quality Sensor
- Relwani S.M., Moschandreas D.J., Billick I.H.
  Indoor Air Quality Control Capabilities of Desiccant Materials
- Kettrup A., Klusmeier W., Ohrbach K.-H.
  A New Filter System for Indoor Pollutant Separation (Particles, Organic and Inorganic Gases)
- Kimmel J.
  Performance of Electrostatic Precipitators in Restaurants
- Sandberg M., Mellin A.
  Artificial Electrostatic Fields as Air Cleaning Systems in Rooms

17:00 **Break**

17:30 Discussion

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Source: https://www.industrydocuments.ucsf.edu/docs/pkhl0000

## Tuesday, 18 August 1987

**15:15** **Symposium**, Saal 2 (Room 2)

**Indoor Air Pollution in Developing Countries**

Organizer: K.R. Smith, Dr., Honolulu (USA)
Chair: M.R. Pandey, Professor, Kathmandu (Nepal)

Presentations (5 min. each):

- Chen, [illegible]; [illegible]
  [illegible] Accepted and Household [illegible] of [illegible]
  [illegible]
- [illegible] and Indirect Exposure [illegible] from Wood Combustion Emissions in [illegible]
- [illegible]
  [illegible] of Indoor Air Pollutants [illegible] Human Health Rural Areas
  [illegible]
- [illegible] Respiratory [illegible] and Carbon [illegible]
- [illegible] Contreras, A.
  [illegible]
- [illegible] M.S.
  [illegible] Indoor NO
  [illegible]
- Ramakrishna, J.
  [illegible] and Behavioral [illegible] Influencing Indoor Air Pollution in Rural India
- Mishra, [illegible]
  Indoor Air Quality in India
- [illegible]
  Indoor Exposure [illegible] Exhaust Pollution on Urban Street [illegible]
  [illegible]
- [illegible] Ringsward, [illegible]
  [illegible]
  Indoor Air Quality in the Manila Area [illegible]

**17:45** Discussion

## Thursday, 20 August 1987

**9:15** **Workshop**, Saal 10 (Room 10)

**Fungal Spores in Indoor Air**

Leaders:
F. Staib, Professor; G. Kunkel, Professor, Berlin (D)

**14:00** **Symposia Summaries**, Saal 3 (Hall 3)
(Symposia of Wednesday Morning)
Chair: B. Berglund, Dr., Stockholm (S)

**14:30** **Plenary Lecture**, Saal 3 (Hall 3)

**Indoor Air Pollution Control**
D. [illegible], Dr., Chicago (USA)

**15:15** **Symposium**, Saal 3 (Hall 3)

**Policy and Strategies**

Organizer: D. [illegible]
Chair: R. [illegible], Dr., Bonn (D)

Presentations (5 min. each):

- [illegible]
  The Role of Total Exposure in Air Pollution Control Strategies
- [illegible]
  Development of a Comprehensive Indoor Air Quality Program, The Minnesota [illegible]
- Berkley, S.D.; Rowe, S.S.
  Tradeoffs Between Energy and Indoor Air Quality Considerations
- [illegible]
  Indoor Air Quality, Radon and Formaldehyde
- [illegible]
  Design of a Statewide Radiation Survey
- [illegible]
  [illegible]
  Health Concerns
  [illegible]
- Harsen, [illegible]
  [illegible] of a State-Wide [illegible] in Solving Indoor Climate Problems

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## Tuesday, 18 August 1987

15:15 **Poster Session** Stall C (Room 6)

**Hypersensitivities and Allergies**

Co-Chairpersons:
T. Ito, Dr. Tokyo (J)
M. Schata, Dr. Moenchengladbach (D)

Presentations (5 min. each):

- Dave J.M., Anwekar A.K.
  Protein and Amino Acids (Allergens)
- Dewair M.F.
  Humoral Immune Responses in Hypersensitivity Pneumonitis
- Grousseau F., Reed C.E., Swanson M.C.
  Aeroallergens in New York Inner City Apartments
- Johnson A.R., Rea W.J., Butler J.R., Pennyes E.J.
  Indoor Pollution - Clinical Evaluation and Treatment
- Rogge S.A.
  Diagnosing the Tight Building Syndrome
- Schata, M., Jorde, W., Linxmann J.H., Limachs H.J.
  Allergies to Moulds caused by Fungal Spores in Air Conditioning Plants

16:00 **Break**

16:30 Discussion at Poster Walls (Area D3)

15:15 **Poster Session** Stall B4 (Room B)

**Radon Surveys**

Co-Chairpersons:
G.A. Swedjemark, Dr. Stockholm (S)
S. Yoshizawa, Dr. Tokyo (J)

Presentations (5 min. each):

- Dunn J.E., Henschel D.B.
  Statistical Aspects of Autoregressive Models in the Assessment of Radon Mitigation
- Gregoire G., Kusnierz J., Janke K., Lehmann M.
  Indoor Gas Concentration

## Thursday, 20 August 1987

9:15 **Poster Session** Stall B (Room B)

**Policy and Strategies**

Co-Chairpersons:
M.A. Berly, Dr. Research Triangle Park (USA)
G. Seidler, Dr. Bonn (D)

Presentations (5 min. each):

- Armstrong V.C., Walkinshaw D.S.
  Development of Indoor Air Quality Guidelines in Canada
- Besserniayer H.
  Smart, Applied Asbestos and Composite Products
- Hanania R.H.
  Violations of Building Bylaws, Energy Conservation and Bad Maintenance as Causes of Indoor Air Pollution
- Crammond B., Kemp W.S.
  American Industrial Hygiene Association Indoor Environmental Quality Reference Manual
- Seppanen A.O.
  Elements of Strategies for Control of Indoor Air Quality
- Tatman E.
  Regulating Formaldehyde in Mobile Homes
- Pepler R., Cuttenham M.
  Smoking in the Workplace - Canadian Law
- Tilton R.W., Thompson M.J., Garman T.
  Regulating Smoking in Public Buildings and Workplace
- Zingg W.
  Questionnaire - A Possibility of Treating Indoor Problems

10:45 **Break**

11:15 Discussion at Poster Walls (Area B1)

Source: https://www.industrydocuments.ucsf.edu/docs/pkhl0000

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## Thursday, 20 August 1987

11:30 **Break**

12:00 Discussion

9:45 **Poster Session**, Saal 9 (Room 6)

**Controls: Source Modification and Air Cleaning**
Co-Chairpersons:
W.W. Nazaroff, Dr., Pasadena (USA)
E. Rodahl, Professor, Trondheim (N)

Presentations (5 min. each):

- Chuang P.C., Chang P.
  Low Cost Control Technology for VOCs Emissions
- Hangartner M., Wanner H.-U.
  Test Criteria for Air Cleaners
- Mølhave Ch., Hangartner M., Wanner H.-U.
  Indoor Measurements of Nitrogen Dioxide and Sulfur Dioxide in Mechanically and Naturally Ventilated Rooms Compared with Outdoor Measurements
- [illegible]
  Ventilation Requirements in Building for Control of Body Odor
- Noyes J.D., Relwani S.M., Moschandreas D.J.
  Development of a Desiccant Based Air Conditioner with Indoor Pollution Control Capabilities
- Panzhauser E., Heindl W., Fail A.
  Advisory Model Formaldehyde
- Sammalkorpi E.
  How to Build a Healthy House

10:45 **Break**

11:15 Discussion at Poster-Walls (Area E 3)

## Tuesday, 18 August 1987

- Henschel D.B., Scott A.G.
  Some Results from the Demonstration of Indoor Radon Reduction Measures in Block Basement Houses
- Jansson B., Thulander M., Axelson O.
  Exposure to Radon in Swedish Dwellings – Attitudes and Elimination
- Jonsson G.
  Some Radon Measurements Indoors and in Ground in Sweden
- Keskinen I., Lehtimäki M., Janka K.
  Reduction of Radon Progeny Concentration by Means of Unipolar Air Ionization
- Moghissi A.A., Schmidt A., Dellaca M.J.
  Enhancement of Exposure to Radon Progeny as a Consequence of Passive Smoking
- Quindos L.S., Fernandez P.L., Soto J.
  Building Materials as a Source of Exposure in Houses
- Sanchez D.C., Hubbard L.M., Harrje D., Turk B.H.
  The Use of Diagnostic Measurements to Enhance the Selection and Effectiveness of Radon Mitigation for Detached Dwellings
- Strömberg O., Norell L.
  Ventilation Measures in Single-Family Houses with High Radon Concentrations

16:15 **Break**

16:45 Discussion at Poster Walls (Area E 1)

15:15 **Poster Session**, Saal 9 (Room 9)

**"Sick Buildings": Indoor Air Quality Research**
Co-Chairpersons:
M.J. Finnegan, Dr., London (GB)
H.-G. Meyer, Professor, Berlin (D)

Presentations (5 min. each):

- Berglund B., Berglund U., Lindvall T.
  Do "Sick Buildings" Affect Human Performance? How Should One Assess Them?

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## Tuesday, 18 August 1987

- Collett G.W., Sterling E.M., McIntyre I.D., Steeves J.F., Weinkam J.J.
  The Building Performance Database: An Analytical Inventory Instrument for Air Quality Research
- Harrison J., Pickering A.C., Finnegan M.J., Anderson P.K.
  The Sick Building Syndrome – Further Prevalence Studies and Investigations of Possible Causes
- Hedge A., Wilson S., Burge P.S., Robertson A.S., Harris-Bass J.
  Indoor Climate and Employee Health in Offices
- Arnold H., Kurz T., Panzhauser E.
  "Sick Buildings" – A Phenomenon of Internal Information Processing
- Lerchen P., Hortnagel J., Kofler W.W.
  Possible Combined Health Effects in White Collar Workers in Complex Exposures
- Nielsen V.H., Mainel J.G.
  A Field Study in Three Office Towers in Quebec, Canada
- Norback D., Rand G., Michel I., Arnoff S.
  Overfrequencies of Skin and Airway Symptoms Among Persons from Sick Buildings and Polluted Industrial Environments in Relation to Exposure
- Robles J., Hill J., Woods J.E., Morey P.R.
  Occupant Assessment of the Indoor Environment
- Sammarco E.
  A Hypothesis on the Mechanisms of the Heat Effects of Mechanical Ventilation and Warm Air Heating
- Stenberg B.
  Skin Complaints in Sick Buildings

16:30 **Break**

17:00 **Discussion at Poster Walls (Area D 2)**

## Thursday, 20 August 1987

- Laursen J., Mathiesen M., Clausen G.H., Fanger P.O.
  Ventilation and Background Odor in Offices

11:45 **Break**

12:15 Discussion

**Symposium**, Saal 7 (Room 7)

**Sources of Volatile Organic Compounds and their Emissions**

Organizer: W.G. Tucker, Dr., Research Triangle Park (USA)

Chair: J. Girman, Dr., Berkeley (USA)

Presentations (15 min each):

- Ozkaynak H., Reed P.B., Wallace L.A., Nelson W.C., Behar J.V.
  Sources and Emission Rates of Organic Chemical Vapors in Homes and Buildings
- Tichenor B.A.
  Organic Emission Measurements via Small Chamber Testing
- Berglund B., Johansson I., Lindvall T.
  Volatile Organic Compounds from Building Materials in a Simulated Chamber Study
- Girman J., Alevantis L., Kulasingam G., Petreas M., Webber L.
  Bake-Out of An Office Building
- Knoppel H., Schauenburg H.
  Screening of Household Products for the Emission of Volatile Organic Compounds
- Hansen T.B.
  Prediction of the Air Concentration Caused by the Use of Household Products Containing Organic Solvents
- Andelman J.B., Wilder L.C., Myers S.M.
  Indoor Air Pollution from Volatile Chemicals in Water

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## Thursday, 20 August 1987

- Pershagen G., Svensson C., Hrubec Z. Environmental Tobacco Smoke and Lung Cancer in Swedish Women [illegible]
- Olander L., Johansson J., Johansson R. Air Cleaners for Tobacco Smoke

**11:45** **Break**

**12:15** **Discussion**

**9:45** **Symposium**, Saal 4/5 (Room 4/5)

**Assessment of Odours, Irritants and Formaldehyde**

Organizer: W.S. Cain, Professor, New Haven (USA)
Chair: H.-U. Wanner, Professor, Zurich (CH)

Presentations (15 min each)

- Broder I., Corey P., Brasher P., Cole P., Lipa M., Mintz S., Nethercott J.R. Comparison of Health of Occupants of Control Homes and Homes Insulated with Urea Formaldehyde Foam Before and After Corrective Work
- Liu K.-S., Huang F.-Y., Hayward S.B., Wesolowski J.J. Irritant Effects of Formaldehyde in Mobile Homes
- Quackenboss J.J., Lebowitz M.D., Broennimann D., Michaud J.P. Formaldehyde Exposure and Acute Health Effects Studies
- Bach B., Mølhave L., Pedersen O.F. Human Reactions During Controlled Exposures to Low Concentrations of Formaldehyde — Performance Tests
- Franck C., [illegible] Grout J.P. Relative Humidity in the Air and Ocular Discomfort in a Group of Susceptible Office Workers
- Miyagawa [illegible] Investigation of [illegible] between Air Contamination and Odor [illegible] in [illegible] Office Building
- Fischer T., Hangartner M., Wanner H.-U. Measurement of Carbon Dioxide of the Indoor Air to Control the Fresh Air Supply

## Tuesday, 18 August 1987

**15:15** **Poster Session**, Saal 10 (Room 10)

**Semi-Volatile and Particle-Bound Organic Compounds**

Co-Chairpersons
J. Gebefügi, Dr., Neuherberg (D)
R. Lewis, Dr., Research Triangle Park (USA)

Presentations (5 min each)

- Hümpel P., Keller R. Detection of Small Concentrations of Pentachlorophenol in Air
- Jaquith D.A., McDavit W.M., Reinert J.C. Monitoring of Air Levels of Termiticides in Homes in the United States
- Kalinic N., Sega K., Hršak J., Šišović A. Phenol Levels in Indoor Air
- Korte F., Gebefügi I. Avoidable and Unavoidable Exposition of Indoor Chemicals
- Mc[illegible], Harris M.M. Tradescantia-Micronucleus (TRAD-MCN) Bioassay — A Promising Indoor Air Pollution [illegible]
- Monteiro [illegible] (Practical demonstration on Wednesday Morning, 9:00 hours, Salon [illegible])
- Oag A.H. Termiticides in Indoor Environments
- Seifert B., Schmahl H.-J. Quantification of Sorption Effects for Selected Organic Substances Present in Indoor Air
- VanDine E., Miller G.H., Waite D.A., Hawthorne A.R., Mage D.T. Indoor Screening of Polycyclic Organic Pollutants: A Field Study in Seventy Homes
- Zsolnay A., Gebefügi I., Korte F. Occurrence of Lindane and PCP in Bavarian Buildings
- Zsolnay A., Gebefügi I., Korte F. The Use of Factorial Analysis to Estimate Synergistic Effects in the Environment

**16:15** **Break**

**16:45** **Discussion** [illegible] Walls (Area A 3)

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## Wednesday, 19 August 1987

**8:00** **Symposia Summaries**, Saal 3 (Hall 3)
(Symposia of Tuesday Morning)
Chair: B. Berglund, Dr., Stockholm (S)

**Plenary Lectures**, Saal 3 (Hall 3)

**8:30** **Ventilation Effectiveness - Past and Future**
E. Rodahl, Professor, Trondheim (N)

**9:00** **Airborne Bacteria and the Indoor Climate**
P.J. Dennis, Dr., Porton Down (GB)

**9:45** **Symposium**, Saal 3 (Hall 3)

**"Sick Buildings": The State-of-the-Art**
Organizer: L. Molhave, Dr., Århus (DK)
Chair: T. Lindvall, Professor, Stockholm (S)

Presentations (15 min. each):

- Skov P., Valbjorn O.
  The "Sick" Building Syndrome in the Office Environment: The Danish Town Hall Study
  (See also related Workshop on Thursday Afternoon)
- Sterling E.M., Moschandreas D.J., Relwani S.M.
  Office Building Investigation
- Hodgson M.J., Permar F., Squire G., Cagney W., Allen S., Parkinson D.K.
  Vibration as a Cause of "Tight Building Syndrome" Symptoms
- Jaakkola J.J.K., Heinonen O.P., Seppanen O.
  Mechanical Ventilation in an Office Building and Sick Building Syndrome: A Short-Term Trial
- Hansen L.
  Monitoring of Symptoms as a Control of the Effect of Intervention in the Sick Building Syndrome
- Wood J.E., Dreven G.M., Morey P.R.
  Office Worker Perceptions of Indoor Air Quality Effects on Discomfort and Performance
- Molhave L.
  The Sick Buildings - A Sub-Population among the Problem Buildings

## Thursday, 20 August 1987

**8:30** **Symposia Summaries**, Saal 3 (Hall 3)
(Symposia of Tuesday Afternoon)
Chair: B. Berglund, Dr., Stockholm (S)

**9:00** **Plenary Lecture**, Saal 3 (Hall 3)

**Environmental Tobacco Smoke:**
**A Public Health Issue**
M.D. Lebowitz, Professor, Tucson (USA)

**9:45** **Symposium**, Saal 3 (Hall 3)

**Environmental Tobacco Smoke:**
**Occurrence, Health Effects and Remedial Actions**
Organizer: B.P. Leaderer, Professor, New Haven (USA)
Chair: G. Persinger, Dr., Stockholm (S)

Presentations (15 min. each):

- Eatough D.J., Benner C.E., Bayona J.M., Caka F.M., Mooney R.L., Lamb J.D., Lee M.L., Lewis E.A., Hansen L.D., Eatough N.L.
  Identification of Conservative Tracers of Environmental Tobacco Smoke
- Lewtas J., Williams K., Lofroth G., Hammond K., Leaderer B.
  Environmental Tobacco Smoke: Mutagenic Emission Rates and Their Relationship to Other Emission Factors
- Hoffmann D., Brunnemann K.D., Haley N.J., Sepkovic D.W., Adams J.D.
  Nicotine Uptake by Nonsmokers Exposed to Passive Smoking Under Controlled Conditions and the Elimination of Cotinine
- Henderson F.W., Morris R., Reid H.F., Hu P.C., Mumford J.L., Forehand L., Burton R., Lewtas J., Hammond S.K., Haley N.J.
  Serum and Urine Cotinine as Quantitative Measures of Passive Tobacco Smoke Exposure in Young Children
- Sigsgaard B., Ranzenne M., Burnett R., Kearney J.
  Respiratory Effects of Early Childhood Exposure to Passive Smoke
- Sandler D.P., Hessing K.J., Comstock G.W.
  Heart Disease Mortality in Persons Living with Smokers

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## Wednesday, 19 August 1987

**11:15** Break

**11:45** Discussion at Poster Walls (Area B 2)

**13:00** Free Afternoon

**16:00** Social: "Indoorers go out"
Departure by coach from ICC and hotels Bristol, Kempinski, Ecomtel, Excelsior, Novotel Airport
(See Social Programme)

**from 22:00** Return by coach to ICC and hotels in the city centre.

## Wednesday, 19 August 1987

**11:30** Break

**12:00** Discussion

**9:45** **Symposium**, Saal 4/5 (Room 4/5)

**Semi-Volatile and Particle-Bound Organic Compounds - Monitoring and Health Effects**
Organizer: L. Wallace, Dr., Washington (USA)
Chair: M. Fugas, Dr., Zagreb (YU)

Presentations (15 min. each)

- Lewis R.G., Bond A.E.
  Non-Occupational Exposure to Household Pesticides
- Lillie Th.H., Barnes E.S.
  Airborne Termiticide Levels in Houses on United States Air Force Installations
- Olds K.L.
  Indoor Airborne Concentrations of Termiticides in Department of the Army Family Housing
- Oehme M., Knoppel H.
  Analysis of Low Volatile (> C..) and Particle Bound Indoor Pollutants - Assessment of a Sensitive Method and First Results
- Daiser J.M., Spengler J.D., Kaarakka P.
  A Comparison of the Organic Chemical Composition of Indoor Aerosols During Woodburning and Non-Woodburning Periods
- Krause C., Englert N., Dube P.
  Pentachlorophenol-containing Wood Preservatives: Analyses and Evaluation

**11:15** Break

**11:45** Discussion

Source: https://www.industrydocuments.ucsf.edu/docs/pkhl0000

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9:45 **Symposium**, Saal 7 (Room 7)

**Ventilation Effectiveness in Buildings and Rooms**
Organizer: P. Warren, Dr., Watford (GB)
Chair: H. Bach, Professor, Stuttgart (D)

Presentations (15 min. each):

- Maijanen A., Helenius T., Seppanen O.
  Air Quality and Ventilation Efficiency in Residential and Office Buildings
- Holmberg R.B., Folkesson K., Stenberg L.-G., Jansson G.
  Experimental Comparison of Indoor Climate using Various Air Distribution Methods
- Larsson B., Nelter K., Strindehag O.
  Ventilation Efficiency in Clean Rooms
- Nagda, N.L., Koontz M.D., Fortmann R.C., Billick I.H.
  Detailed Evaluation of Kahlen Exhaust Fans
- Kovanen K., Seppanen O., Siren K., Majanen A.
  Turbulent Air Flow Measurements in Ventilated Spaces
- Offermann F.J., Int-Hout D.
  Ventilation Effectiveness and ADPI Measurements of Three Supply/Return Air Configurations

11:15 **Break**

11:45 **Discussion**

9:45 **Poster Session**, Saal 6 (Room 6)

**Multicomponent Field and Laboratory Studies**
Co-Chairpersons:
A.R. Hawthorne, Dr., Oak Ridge (USA)
H.S. Hu, Professor, Beijing (P.R. China)

Presentations (5 min. each):

- Ammann H.M., Berry M.A.
  Health Risk Profile for Indoor Air
- Baer N.S.
  Air Pollution in Museums, Libraries and Archives: Sources, Effects and Controls

Wednesday, 19 August 1987

- Ehnmann J.H., Lanskens H.F., Schata M., Jorde W.
  Can Airborne Fungal Allergens Pass through an Air Conditioning System? Preliminary Results
- Gravesen S.
  Microbiological Studies on Carpets versus Hard Floors in Non-Industrial Occupations
- Juranski N.B.
  Quantitative Evaluation of Indoor Microbial Contamination on Airborne, Surface and Bulk Samples
- Nevalainen A., Jantunen M., Pellikka M., Pitkanen E., Kalliokoski P.
  Airborne Bacteria, Fungal Spores and Ventilation in Finnish Daycare Centers
- Ohgke H., Geurs A., Beckert J.
  Fungal Load of Indoor Air in Historical and Newly Constructed Buildings Used by Public Services
- Raza S.H., Kauser R.
  Indoor Aerobiological Pollution in Certain Indian Domestic Environments
- Seidel K., Bar G., Börnert W., Seeber E.
  Legionellae in Aerosols and Splashwaters in Different Habitats
- Stark P., Seibold M., Heißenhuber M.
  Indoor Air Mycology – Aspergillosis, Mucormycosis and Cryptococcosis Caused by Fungal Spores from Indoor Air
- Streifel A.J., Rhame J.S., Vesley D., Murray B.
  Control of Airborne Fungal Spores in a University Hospital
- Sugawara F., Yoshizawa S.
  Study on the Collection Characteristics of Andersen Biological Air Samplers: Estimation of Size Distribution of Real Aerosols
- TerKonda P.K.
  Sources and Effects of Microbiological Indoor Pollutants
- Tobin R.S., Baranowski E., Gilman A.P., Kuper-Goodman T., Miller J.D., Giddings M.
  Significance of Fungi in Indoor Air: Report of a Canadian Working Group
- van Wageningen S., Wargemaekers M., Brunekreef B., Boleij J.
  Health Complaints and Indoor Moulds in Relation to Moist Problems in Homes
- Volksch G., Horn H., Gunter A.
  Investigations on Individual Humidification

Source: https://www.industrydocuments.ucsf.edu/docs/phhl0000

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## Wednesday, 19 August 1987

- Matsuki H., Yanagisawa Y., Spengler J., Kasuga H.
  Urinary Cotinine Measurements for Passive Smokers Using Gas Chromatography and Flame Thermionic Detector with Glass Capillary Column
- McCurdy S.A., Kado N.Y., Schenker M.B., Hammond S.K., Benowitz N.L.
  Measurement of Personal Exposure to Mutagens in Environmental Tobacco Smoke
- Muelenaer P., Reid H., Morris R., Saltzman L., Horstman D., Collier A., Henderson F.
  Urinary Thioroxyproline Excretion in Young Males Exposed Experimentally to Nitrogen Dioxide
- Sapper L., Rivedal E.
  Enhanced Transformation of Syrian Hamster Embryo Cells by Combined Exposure to Cigarette Smoke Extract and Benzo(a)Pyrene or Nickel Sulphate
- Scherer G., Westphal K., Hoepfner L., Adlkofer F.
  Biomonitoring of Exposure to Potentially Mutagenic Substances from Environmental Tobacco Smoke (ETS)
- Yanagisawa Y., Matsuki H., Spengler J.D., Kasuga H.
  Evaluation of Tobacco Smoke Using Urinary Cotinine as an Indicator of Dose and Hydroxyproline as an Indicator of Effects

**11:00** **Break**

**11:30** Discussion at Poster Walls (Area D 4)

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**9:45** **Poster Session**, Saal J0 (Room 10).

**Microbiological Indoor Pollutants**

Co-Chairpersons:
B. Flesh, Professor, Paris (F)
K.-W. Horn, Professor, Berlin (DDR)

Presentations (5 min. each)

- Al-Zuhairy T.
  Effects of Aircoolers on City Dwellers
- Brenner P.W.H.
  Airborne Microbial Flora in Florida Homes (Preliminary Study)



## Wednesday, 19 August 1987

- Hawthorne A.R., Matthews T.G., Dudney C.S., Vo-Dinh T., Spengler J.D., Mage D.T.
  Performance of Passive Indoor Air Quality Monitors in a Multipollutant Field Study
- Keskinen J., Kulmala V., Graeffe G., Hautanen J., Janka K.
  Continuous Monitoring of Air Impurities in Dwellings
- Krause C., Kirschner W., Schulz C., Dube P.
  Environment and Health: Survey and Analyses of Environmental Exposure Factors in the Federal Republic of Germany
- Landrus G., Zuchowski M., Rosenzweig-Witherspoon J., Hunter J.
  Effects on Perceived and Measured Air Quality, Health, Absenteeism and Energy Consumption, of Installing Openable Windows in a "Sealed" School
- Large Jr. R.B.
  Indoor Air Quality Within the Home as a Function of Electric or Gas End-Utilization
- Matsumura T., Kametani K., Takeda M., Muramatsu S.
  Simultaneous Determination Method of Personal Exposure Levels for Formaldehyde and Nitrogen Dioxide
- Sheldon L.S., Saeger M.L., Cox B.G., Smith M.L., Hartwell T.D., Rizzuto J.
  Determination of the Impact of Infiltration Reduction Measures on House Air Leakage
- van Dongen J.E.F.
  Indoor Air Problems in Different Types of Newly Built Dwellings
- Waldman J.M., Lioy P.J., Harkov R., Greenberg A.
  Field Study of Human Exposure to Benzo(a)pyrene in a Community Directly Impacted by a Foundry

**11:00** **Break**

**11:30** Discussion at Poster Walls (Area F 2)

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## Wednesday, 19 August 1987

**9:45** **Poster Session**, Saal 8 (Room 8)

**Indoor Air Pollution in Developing Countries**
Co-Chairpersons:
D.R. Ahuja, Dr., New Delhi (IND)
A. Cáceres, Dr., Guatemala City (GCA)

Presentations (5 min. each):

- Aghdasi N.
  Indoor-Outdoor Relationship of Total Suspended Particulate and Inhalable Particulate Matter in Tehran, Iran
- Bekele Adu F.
  Neglected Environmental Human Requirements in Ethiopian Traditional Houses
- Davidson C.I., Pandey M.R.
  Particulate and Gaseous Pollutants in Residences in Nepal
- Fouladirad J.
  Combustion Gases: Sources, Characteristics and Health Effects
- Gadgil A.
  Indoor Air Quality in Offices and Hospitals in High-Altitude Himalaya
- Jindal S., Prasad R.
  Studies on Environmental Aspects of Cook-Stoves
- Joshi V., Venkataramu C., Ahuja D.R.
  Thermal Performance and Emission Characteristics of Biomass Burning Heavy Stoves with Chimneys
- Mandal A., Prasad R., Guha B.K., Sarkar M.K.
  Mechanism of Smoke Generation in Coal-Fired Chulhas and its Means of Elimination
- Manoharachary C., Saibaba M.
  Some Aspects and Prospects of Indoor Aeromycoflora from India
- Raza S.H., Nirmala B., Murthy M.S.R.
  Studies on the Components of Air Borne Dust Particles in Indoors of Secunderabad Railway Station and Mess
- Saibaba M., Manoharachary C.
  Studies on Atmospheric Fungi of Some Indoor Environments (India)

## Wednesday, 19 August 1987

- Smith K.R., Durgaprasad M.B.
  Difficulties in Achieving and Verifying Exposure Reductions in Village Households with Improved Biofuel-fired Cookstoves

**11:00** **Break**

**11:30** Discussion of Poster Walls (Area C 4)

**9:45** **Poster Session**, Saal 9 (Room 9)

**Environmental Tobacco Smoke: Biomarkers and Health Effects**
Co-Chairpersons:
N.J. Haley, Dr., Valhalla (USA)
J. Schlatter, Dr., Schwerzenbach (CH)

Presentations (5 min. each):

- Clausen G.H., Moller S.B., Fanger P.O.
  The Impact of Air Washing on Environmental Tobacco Smoke Odor
- Clausen G.H., Nielsen K.S., Sabin F., Fanger P.O.
  Sensory Irritation from Exposure to Environmental Tobacco Smoke
- Corvali M., Kazemi-Vala E., Enzell C.R., Olander L., Johansson L.
  Inhaled Amount of Tobacco Smoke During Passive Smoking
- Golastein G.M., Collier A., Etzel R., Lewis J., Haley N.
  Elimination of Urinary Cotinine in Children Exposed to Known Levels of Side Stream Cigarette Smoke
- Haley N.J., Adams J.D., Axelrad C.M., Hoffmann D.
  Sidestream Smoke Uptake by Syrian Golden Hamsters in an Inhalation Bioassay
- Hoepfner J., Schaner G., Adlkofer F., Dettbarn G., Grimmer G.
  Urinary Excretion of Hydroxy-phenanthrene after Intake of Polycyclic Aromatic Hydrocarbons
- Jaczyk L., Schaner G., Hoepfner L., Luu H.T., Adlkofer F.
  Uptake of Nicotine from Environmental Tobacco Smoke (ETS) via Different Inhalation Routes

Source: https://www.industrydocuments.ucsf.edu/docs/pkhl0000
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